IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Ahrens, Jr. et al.**	§	
	§	Group Art Unit: **2151**
Serial No. **09/978,352**	§	
	§	Examiner: **Karen C. Tang**
Filed: **October 16, 2001**	§	
	§	
For: **Data Processing System, Method, and Product for Reporting Loss of Service Application**	§	

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

35525
PATENT TRADEMARK OFFICE
CUSTOMER NUMBER

REPLY BRIEF (37 C.F.R. 41.41)

This Reply Brief is submitted in response to the Examiner's Answer mailed on June 28, 2007.

No fees are believed to be required to file a Reply Brief. If any fees are required, I authorize the Commissioner to charge these fees which may be required to IBM Corporation Deposit Account No. 09-0447.

RESPONSE TO EXAMINER'S ANSWER

This Reply Brief is filed to address the issues raised by the Examiner in her Answer mailed June 28, 2007.

In the Examiner's Answer on page 11, lines 15-19, the Examiner states: "Appellant argues that the combination of the connectivity monitor of AAPA and *Moiin* does not teach a service processor or a service application that is executing in a hardware management console. The examiner disagrees. It is clearly stated in AAPA that the service application maybe executed by the hardware management console, 0003, Lines 3-4."

The Examiner is correct. Appellants inadvertently included a misstatement in the Appeal Brief. Appellants thank the Examiner for helping Appellants correct the Appeal Brief.

In the Examiner's Answer on page 12, lines 15-20, the Examiner states: "The examiner respectfully disagrees. Appellant has never, implicitly or explicitly, in the specification or in the Summary of the Claimed Subject Matter of the Appeal Brief or in the Argument Section of the Appeal Brief, indicated what a service application, a service partition, or a service processor is or could be. Appellant, at most, only defines what the capabilities of a service application, a service partition, or a service processor and identifies where they are located within appellant's system." Appellants disagree.

In Appellants' specification and figures, Appellants fully explain service application, service processor, service partition, and logically partitioned platform and hardware.

> [0003] The hardware management console may also be used to monitor and report errors that may occur in one of the partitions. A service application may be executed by the hardware management console which receives notification of errors from the various operating system partitions of the logically partitioned computer system. The service application is responsible for consolidating the errors, attempting to evaluate the errors, and making a minimum required number of service calls. Thus, in order to perform these functions, the hardware management console must be connected to the logically partitioned computer system and functioning properly.
>
> [0004] A logical partitioning option (LPAR) within a data processing system (platform) allows multiple copies of a single operating system (OS) or multiple heterogeneous operating systems to be simultaneously run on a single data processing system hardware platform. A partition, within which an operating system image runs, is assigned a non-overlapping subset of the platform's

hardware resources. These platform allocable resources include one or more architecturally distinct processors with their interrupt management area, regions of system memory, and input/output (I/O) adapter bus slots. The partition's resources are represented by its own open firmware device tree to the OS image.

[0005] Each distinct OS or image of an OS running within the platform is protected from each other such that software errors on one logical partition can not affect the correct operation of any of the other partitions. This is provided by allocating a disjoint set of platform resources to be directly managed by each OS image and by providing mechanisms for ensuring that the various images can not control any resources that have not been allocated to it. Furthermore, software errors in the control of an operating system's allocated resources are prevented from affecting the resources of any other image. Thus, each image of the OS (or each different OS) directly controls a distinct set of allocable resources within the platform.

[0037] Logically partitioned platform **200** also includes a designated service partition **204**. Service partition **204** may be used by a system administrator to set parameters, install firmware updates, and perform other service functions.

Appellants' specification paragraphs 0003-0005 and 0037.

Appellants also describe and explain logically partitioned hardware with reference to Appellants' Figure 3 and its related description.

Furthermore, the terms "application" and "processor" are terms of art that are used by Appellants according to their commonly understood definitions. An "application" is defined by Microsoft Computer Dictionary, Fifth Edition, published 2002 by Microsoft Press, as "a program designed to assist in the performance of a specific task, such as word processing, accounting, or inventory management." Therefore, an "application" is software.

A "processor" is defined by Microsoft Computer Dictionary, Fifth Edition, published 2002 by Microsoft Press, as "See central processing unit, microprocessor". A "microprocessor" is defined by Microsoft Computer Dictionary, Fifth Edition, published 2002 by Microsoft Press, as "A central processing unit (CPU) on a single chip. A modern microprocessor can have several million transistors in an integrated-circuit package that can easily fit into the palm of one's hand. Microprocessors are at the heart of all personal computers..." Therefore, a "processor" is hardware.

Therefore, Appellants have fully explained service application, service processor, service partition, and logically partitioned platform and hardware, both explicitly in Appellants'

specification and figures, and implicitly by incorporating commonly understood definitions of terms of art.

In the Examiner's Answer on page 13, lines 4-6, the Examiner states: "For argument purpose, it was indicated on the Final Office Action filed backed in November 06, that the examiner's position is that the connectivity monitor reads on the claim limitation service application in that is performs the functions of a service application (refer to Col 8, Lines 40-50)." Also on page 13, lines 18-20, the Examiner states: "Moreover, the connectivity monitor *IS* the service processor, the connectivity monitor *has* the capability to monitor presents of other nodes (functioning of the nodes (functioning of the nodes, refer to Col 5, Lines 50-67 and Col 11, Lines 63-67)."

It appears that the Examiner is arguing that the connectivity monitor is both a service application and service processor. However, according to Appellants' claims, a service application cannot be a service processor.

Appellants claim the service application executing on the hardware management console, which is a stand-alone system that is separate from the logically partitioned computer system. The service processor is included within the logically partitioned computer system. Thus, the service application and service processor are in separate systems. Therefore, a service application cannot be a service processor.

In the Examiner's Answer on page 13, lines 16-17, the Examiner states: "*Moiin* further suggests that the partition manager can also be one of the nodes (Col 6, Lines 1-5)." Appellants disagree. This section of *Moiin* is reproduced below:

> The partition monitor (PM) 22 is connected to the public network 10 via a line 56 and to the redundant maintenance bus 60 via a line 58. In the present embodiment, the partition monitor 22 must be provided with some intelligence, but it does not need to have a central processing unit. The partition manager is operable to control the partition of shared storage between the nodes of the distributed fault tolerant computer system in order to avoid data inconsistency. For example, as shown in FIG. 1, the nodes 30.1 and 30.2 share the storage units (e.g. disks) 40.1 and 40.2. The partition monitor 22 is thus able to ensure that only one of the processing units 32.1 and 32.2 has access to any particular region of the storage units 40.1 and 40.2 at any one time. This can avoid a situation where both of the processing units 32.1 and 32.2 write to the same location in storage, which could cause data inconsistency.

Moiin, column 5, line 65, through column 6, line 15.

This section of *Moiin* does not suggest that the partition monitor could be one of the nodes. In fact, *Moiin* teaches away from the partition monitor being one of the nodes. The purpose of *Moiin* is to provide a fault tolerant system. The partition monitor is provided to collect connectivity information from each connectivity monitor, and repartition the nodes in case the hardware components or the operating system of a node fails, or if there is a failure of the private communication medium 24. If the partition monitor were to be included in a node, and that particular node failed, the purpose of *Moiin* would be defeated because the partition monitor would be unable to repartition the nodes. Therefore, *Moiin* teaches away from including the partition monitor in a node.

In the Examiner's Answer on page 14, lines 10-13, the Examiner states: "Appellant argues that *Moiin* does not teach monitoring a service application. The examiner disagrees. The *Moiin* system determines whether or not there is "ON" signal. This ***is*** a monitoring action. Appellant has not specifically defined monitoring is in the specification."

Appellants have indeed defined that action of "monitoring" in the specification. Appellants teach:

> [0044] FIG. 4 illustrates a high level flow chart which depicts monitoring for a presence of a service application, and reporting any loss of the service application in accordance with the present invention. The process starts as depicted by block 400 and thereafter passes to block 402 which illustrates booting the data processing system. Next, block 404 depicts the service processor checking for a hardware management console heartbeat generated by the service application being executed by the hardware management console. Thereafter, block 406 illustrates a determination of whether or not a heartbeat was detected. If a determination is made that a heartbeat was detected, the process passes to block 408.

[Emphasis added]

Appellants' specification, paragraph 0044.

"Monitoring" as described by Appellants in the specification is "the service processor checking for a hardware management console heartbeat generated by the service application being executed by the hardware management console". *Moiin's* teaching that an ON status can be used to indicate that a node's power supply is on does not teach checking for a heartbeat. A steady-state ON signal is not a heartbeat. The ON signal is also not generated by a service application. Therefore, *Moiin* does not teach monitoring a service application.

In the Examiner's Answer on page 15, lines 4-9, the Examiner states: "The examiner

disagrees. The connectivity monitor resides within the nodes, when the software fails (e.g., connectivity monitor fails) as indicated on Col 11, Lines 60-67, which causes the connectivity signal to not be sent by the particular nodes (connectivity monitor is responsible to send the heart beat signal to indicate whether or not the nodes is alive, refer to Col 11, Lines 57). Therefore, *Moiin* does teach that the CM could be absent and teaches monitoring a presence of the connectivity monitor". Appellants disagree.

The Examiner states "when the software fails (e.g., connectivity monitor fails)". *Moiin* does not describe the possibility that the connectivity monitor might fail. *Moiin* describes software failure as the operating system hanging. See *Moiin*, column 3, lines 11-15. Therefore, the reference in *Moiin* to software failing does not teach the connectivity monitor failing.

The Examiner also refers to column 11, line 57, and asserts that it teaches the connectivity monitor sending a heartbeat signal to indicate that the node is alive. Applicants disagree. *Moiin*, column 11, line 57, does not describe the connectivity monitor sending a heartbeat signal to indicate that the node is alive.

> The connectivity monitor 128 on each node 30 of the distributed system sends its connectivity graph to the partition monitor and it enables a logical connection between the nodes 30 of the system that is built on top of redundant physical links. This allows the other modules of the system and the application processes (where distributed applications are supported) to communicate via a fault tolerant link and be immune from the failures of the private communication medium 24. The connectivity monitor needs to ensure that the links are operational and this can be done via exchange of heartbeats.

[Emphasis added]

Moiin, column 11, lines 47-57.

Thus, the heartbeat is used to indicate that the physical links, not the operating software within a node, is functioning.

In the Examiner's Answer, on page 15, lines 12-16, the Examiner states: "It is the service processor that monitors the presence of the service application. As indicated before, the Partition Monitor (service processor) received the connectivity information from the connectivity manager (service application), so when the connectivity manager fails (Col 11, Lines 57), no connectivity signal will be received (refer to Col 6, Lines 15-30, Col 11, Lines 5-10)."

Moiin does not teach the partition monitor not receiving a signal from a connectivity manager. "The connectivity monitor 128 on each node 30 of the distributed system sends its

connectivity graph to the partition monitor.." *Moiin*, column 11, lines 47-49. "The partition monitor 22 accomplishes its task by collecting the required connectivity information from each connectivity monitor..." *Moiin* column 12, lines 6-8. Thus, *Moiin* does not teach the possibility that "so when the connectivity manager fails (Col 11, Lines 57), no connectivity signal will be received" as stated by the Examiner.

In the Examiner's Answer on page 15, line 17, through page 16, line 3, the Examiner states: "Appellant argues that *Moiin* does not teach or suggest a service partition. The examiner disagrees. As indicated before, appellant has never defined, implicitly or explicitly what a service partition is. However, it appears that appellant intended to use the service partition to inform the system administrator when the service application is absent. Thus, *Moiin* discloses this limitation by teaching the act of disclosing to the system administrator when the service application is absent (refer to Col 12, Lines 12-15). Therefore, *Moiin's* system has the service partition, which is the act of information system administrator." Appellant disagrees.

Moiin teaches the partition monitor issuing messages to a system administrator. *Moiin* does not teach reporting using a service partition to a system administrator of the service partition, where a partition is defined by Appellants to be assigned a non-overlapping subset of the platform's hardware resources. The platform allocable resources include one or more architecturally distinct processors with their interrupt management area, regions of system memory, and input/output (I/O) adapter bus slots, where the partition's resources are represented by its own open firmware device tree to the OS image. See Appellants' specification, paragraph 0007. Therefore, *Moiin* does not teach a service partition.

CONCLUSION

Appellants rely on the Appeal Brief with reference to all other comments made by the Examiner in the Examiner's Answer. Appellants believe the claims are allowable over the cited prior art and that the application is in condition for allowance. Accordingly, Appellants respectfully request the Board of Patent Appeals and Interferences to overturn the rejections set forth in the Final Office Action.

/Lisa L.B. Yociss/
Lisa L.B. Yociss
Reg. No. 36,975
YEE & ASSOCIATES, P.C.
PO Box 802333
Dallas, TX 75380
(972) 385-8777